freedom, is not in the spectator who considers the action, but in the agent?

Is our failure to find proof of freedom in our bodily machinery and its activity anything more than we should look for if freedom is not in the spectator, so far forth as he is merely a spectator and not a participant?

If the certainty of scientific predictions does not imply necessity, and if freedom in willing and doing is not in the spectator, are we not led to agree with Berkeley, that "certain and necessary are very different, there being nothing in the former notion which implies constraint, and which may not consist with a man's being accountable for his actions"?

If physical necessity is not in nature, but in the spectator; if freedom is not in the spectator, but in the agent; if the certainty of scientific predictions does not imply constraint;—does not the controversy about necessity and freedom come to an end for the man of science? Does science afford any ground for controversy?

A CLASSIFICATION OF ECONOMIES.

BY PROF. LINDLEY M. KEASBEY.

(*Read April 5, 1902.*)

Economics has to do with the weal relation between life and the environment. From life, on the one hand, emanates demand for well-being; from the environment, on the other hand, is derived the supply of useful things or goods that minister to well-being. In the last instance, therefore, the weal relation between life and the environment is a relation between demand and supply. Now, demand and supply are connected—made to meet, as economists say—by the utilization of natural resources. The object of this process is to derive from the outer world the qualities requisite to fulfill the demands of well-being, or, more precisely, to convert the potential utilities inherent in the environment into actual utilities. Thus, in its simplest sense, an economy may be defined as a system of activities whereby the potential utilities inherent in the environment are through utilization converted into actual utilities.

The very existence of life implies some such system of activities;

wherever the essential weal relation is established between life and the environment, there the process of utilization is operative. In its widest extension, therefore, the term economy can be applied over the whole range of evolution, from the lowest to the highest orders of animate existence. Furthermore, cursory comparison shows that with the development of life the process of utilization becomes more and more complicated. Thus, regarded from the utilitarian point of view, evolution exhibits a succession of economies increasing in complexity.

It is out of the question, of course, to elaborate this long series in detail. As a matter of fact, no hard and fast distinctions can be established between the several orders of economies, since in each instance the more complex proceed, as it were, by insensible steps out of the simpler, leaving no appreciable spaces between through which lines of demarcation may be drawn. Nevertheless, if we confine ourselves to generalities and content ourselves with obvious distinctions, it is possible to establish the general order of economic development and characterize the several types of economies.

For convenience' sake biologists still distinguish between plant life, animal life and human life, what though they are well aware that the laws of organic evolution to which the three orders of life are subjected are essentially the same. It is possible to establish a corresponding series in the order of economic development, but we must not lose sight of the fact that the differences to be noted are merely differences of degree and in no sense distinctions in kind. This, then, is the primary purpose of the present paper: to indicate the types of economies characteristic of plant life, animal life and human life respectively. It will be seen, when this series is established, that the human economy differs far more from the economies of the lower orders of life, than the economies of plant and animal life differ from each other. Though evidently an elaboration of the preceding types, the human economy is in certain respects so different as practically to constitute a separate system. Having shown this to be the case, I shall devote the remaining portion of my paper to establishing the human economy upon its higher plane.

In the first place, in order to establish the required series of economies, it is necessary to adopt a canon of distinction. To this end I would suggest that characteristic types of economies can be distinguished from each other in two ways: subjectively, according

to the incentive leading to utilization; and, objectively, according to the means employed in the process.

Applying this canon of distinction in the first place to the simpler systems of activities, it is possible to establish two types of economies—the AUTOMATIC and the INSTINCTIVE—characteristic respectively of the plant and animal worlds.

Under the automatic system the stimulus inciting utilization is involuntary, and as this is the case, the means employed in the process are necessarily natural organs that act without the intervention of the will. Thus plants, for example, as well as some of the lower orders of animals, assimilate the life-sustaining elements inherent in their immediate environment by simple reflex action, involving no conscious effort on their part.

Under the instinctive system, on the other hand, the impulse leading to utilization is voluntary, and as this is the case, the means employed in the process consist for the most part of natural organs that act in obedience to the will. Thus, as opposed to plants, animals may be said to be urged by their appetites to utilize natural resources. It is instinct in their case that induces economic activity. That is to say, the higher animals as a rule are impelled by their natural desires of self and kind preservation to acquire such products of their local environment as go to gratify their own appetites and provide for the preservation of their progeny. And as nature has provided them for the most part with the natural organs necessary to gratify their desires, little or no ingenuity is necessary to this end.

The most complicated economy is that characteristic of human life. In contradistinction to the foregoing, this highly complex system may be designated as the RATIONAL ECONOMY. Right early in the course of their development, human beings appear to have become imbued with an intelligent purpose to meliorate their material condition and so raise the standard of life of themselves and their associates. And not being physically equipped by nature to realize their economic ideals, far back in the course of their career they began to exercise ingenuity in the manufacture of artificial instruments of utilization. Thus, to distinguish the human economy from that characteristic of the animal orders, it may be said: under the rational system the motive making for utilization is purposive, and the means employed in the process consist for the most part of artificial implements manufactured for the purpose.

Having applied our canon of distinction over the whole range of economic development, there appear to be three fundamental types of economies, the automatic, the instinctive and the rational, characteristic respectively of plant, animal and human life. In the automatic economy the stimulus exciting utilization is spontaneous, and the means employed in the process consist of natural organs that act without the intervention of the will. In the instinctive economy the impulse leading to utilization is voluntary, and the means employed in the process consist for the most part of natural organs that act in obedience to the will. In the rational economy the motive making for utilization is purposive, and the means employed in the process consist for the most part of artificial implements manufactured for the purpose.

The foregoing classification gives a general idea of the order of economic development, and enables us to distinguish superficially between the three fundamental types of economies. The distinction between the automatic and the instinctive systems, it will be noticed, is not nearly so marked as that between these simpler systems, on the one hand, and the highly complex human economy on the other. Indeed, if Professor Loeb is right in regarding instinctive action as essentially the same as reflex action, the separation of the instinctive economy from the automatic economy must be taken to express simply a superficial distinction, or at most to mark a minor difference of degree. Rational activities are, however, radically different from instinctive acts, though here too, no doubt, the difference is ultimately one of degree. Wherein these latter differences consist is the task of the psychologist to show. It is enough for the economist to take cognizance of the facts and establish his distinctions accordingly. On the face of it, the fact that the human economy constitutes a rational system evidently places it upon a higher plane than the economies characteristic of the lower orders of life. Then, again, regarded from the point of view of economic development, a further distinction is discernible in the process of utilization characteristic of the rational system. In the rational economy utilization appears to make for progress; whereas under the automatic and instinctive systems utilization seems to be simply conservative.

It is evident enough, as has already been indicated, that with the development of plant and animal life the process of utilization becomes more and more complicated, but in all these cases increased complexity appears to be rather the effect of variation and selection

than the outcome of economic initiative. Thus the instinctive system, characteristic of the animal world, becomes more and more complicated as we advance from the lower to the higher orders of animal life; but there is nothing to indicate that this increase of complexity is due to conscious effort on the animal's part. Lamarck, it is true, attributed appetency to animals and endeavored to prove that evolution is to a large extent the result of active initiative; but modern opinion still inclines to the belief expressed by Darwin that the process is effected unconsciously, through natural selection. But it is not necessary at this juncture to go into this abstruse question of the relative importance of appetency and variability in the evolutional process. We are dealing, it will be remembered, merely with differences of degree, and may accordingly content ourselves with establishing obvious distinctions. This much at least is evident from casual observation: if we exclude the development of the human species from our survey, progress in the economic sense is not a notion that can properly be applied to the evolution of animal life, and of course much less to plants. Even the highest animals, when once adapted to their environment, show no disposition in their natural state to improve their material condition or meliorate the lot of their progeny. On the contrary, to the extent that they remain uninfluenced by selection, animals and their offspring appear to be urged by the same appetites, to utilize the same resources in the same way from generation to generation. The impulse leading to utilization is in their case instinctive, and therefore more or less rigidly determined along certain definite lines. And inasmuch as nature has provided them with the means of utilization, it is not necessary for them to exercise ingenuity in the invention of artificial instruments. Some animals do, to be sure, manufacture artificial implements of production—witness, for example, beavers that build dams, or certain ants that actually cultivate their fields. Still even in such cases nature supplies the necessary tools, and it would be difficult to find instances in which animals were led to improve their productive processes with a view to meliorating their material condition. Thus, from the fact that the impulse leading to utilization is in their case instinctive, and from the further fact that the means employed in the process are for the most part natural organs that act without the intervention of intelligent foresight on their part, animals may be said to subsist in a circle. Appetite impels them in first instance upon their food quest, and the

nutriment when acquired is assimilated. During the process of digestion a period of rest or play ensues until the original appetites are re-aroused, when hunger again sets them in search of subsistence with the same result. The life of the anaconda is the most striking example of this circular sort of existence, though the description applies in a less degree to all orders of animals, whose existence for the most part amounts to a monotonous round of acquisition and assimilation as long as life lasts, and is afterwards carried on in much the same way by their offspring. Obviously there is nothing in such a system to stimulate progress, for the economic sequence once established is recurrent: demand tends toward utility, utility leads to utilization, and utilization results in supply, over and over again.

Turning from the instinctive to the rational economy, the phenomenon of progress becomes immediately apparent. If we extend our survey to include the activities of mankind, it is evident enough that utilization is a potent factor of development. Not that the human species is not subject, like all other animals, to the process of selection; by no means—indeed, as ethnology shows, the human species has in the course of time, through the interaction of variability and environment and by dint of selection, become differentiated into a number of ethnic stocks. Only the process of human development does not appear to stop there. In man's case—and, as far as I can see, in man's case alone—utilization has made for further progress along economic lines. That is to say: men of the same descent, who do not differ from each other ethnically to any appreciable extent, who are to all intents and purpose alike as far as structure and function are concerned, still exhibit striking differences in their manner of life. Thus the Frenchman of the provinces and the Frenchman of Paris are ethnically alike, but differ enormously in their economic activities. And offspring that vary ever so slightly from their parents in the organic sense very often show decided increase of economic capacity. For example, the Englishmen of to-day are very much like the Englishmen of three hundred years ago, but in their manner of life they differ widely from their ancestors. On the other hand, people of diverse ethnic stocks, if placed under the same economic conditions, soon conform to an established standard of life and adopt similar ways of living. Our own country furnishes a striking instance of this. The population of the United States is recruited from all countries of the world, but

despite this ethnic divergence a distinctly American standard of life has been established to which all citizens, foreigners and natives alike, endeavor to conform. Since such are the facts it is evidently necessary in man's case to draw a sharp distinction between progress through selection and progress by utilization—between what may be called ethnic variations and economic distinctions.

Let us examine the situation a little more closely. Looking first to the subjective side, human beings do not seem to be content, as most animals are, to consume the same goods day after day, year after year, and from generation to generation. On the contrary, man appears to be bent on obtaining variety. The gratification of one set of desires seems to cause a new series to emerge in the mind. We imagine we shall be satisfied with what we want, but acquisition soon convinces us to the contrary—like the boy who found a watchkey, and on the basis of this possession asked his father for a watch. In short, the mere fact of acquisition extends the horizon of our wants and arouses a desire for further acquisition; or, to put it in economic terminology, the possession of certain essential goods stimulates a demand for complementary goods. Without dwelling on this pyschic phenomenon, so familiar to us all, it may be stated as a general proposition: human beings naturally seek variety and strive to extend the scope of their consumption.

The emergence of new wants in men's minds naturally suggests a corresponding series of satisfactions; demand is necessarily correlated with supply. Suppose we turn, then, to the objective side and take the extrinsic factors into account. The moment the conditions of supply are considered, it becomes apparent that man's desire to extend the scope of his consumption is met by obstacles arising from the character of the environment. Outer nature affords a few free goods, it is true, but by no means enough to satisfy man's expanding wants. For the rest, raw materials must be transformed into pleasure-giving products by artificial processes. To this end implements are necessary, since human beings are not equipped, as most animals are, with the technical means of production. Organization is also essential, as it is only through the systematic division and association of their productive forces that men are able to provide the requisite variety of goods. Because his expanding wants outstrip his inherited capacity, to overcome the obstacles arising between demand and supply, man is accordingly

required to exercise ingenuity in invention and undertake economy in organization. Or, to express it more concisely: in order to extend the scope of their consumption human beings are compelled to improve their means and methods of production.

Putting two and two together, the situation seems, then, to be this: man's desire for variety urges him to extend the scope of his consumption, and in order to extend the scope of his consumption he is obliged to improve his means and methods of production. Thus, in contradistinction to the circular sort of existence characteristic of animal life, the course of human progress is upward, so to speak, along the lines of a spiral. The emergence of elementary wants in men's minds stimulates invention and organization and results in the production of goods. The consumption of these essential goods causes wants for complementary goods to emerge in the mind, and these new wants in turn stimulate further invention and organization. Thus new wants call continually for the improvement of productive processes, improved productive processes provide a further variety of goods, which in being consumed cause still other wants to emerge in the mind that call for further improvement of productive processes, and so on; want inducing satisfaction and satisfaction inducing want almost indefinitely.

Thus in the rational economy the economic sequence is progressive and not merely recurrent as in the instinctive economy. Instead of demand tending toward utility, utility leading to utilization, and utilization resulting in supply over and over again, as is the case with most animals, in man's case expanding demand tends toward the augmentation of utility, the augmentation of utility leads to increasing utilization and increasing utilization results in the differentiation of supply.